99D-126

Proposal Title: *Adaptive Development of a Watershed Specific Pesticide Use Monitoring Strategy*

Applicant Name: California Department of Pesticide Regulation
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Amount of funding requested: $729,726 for 3 years

Indicate the Topic for which you are applying (check only one box).

	Fish Passage/Fish Screens		Introduced Species
	Habitat Restoration		Fish Management/Hatchery
	Local Watershed Stewardship		[iv] Environmental Education
X	Water Quality		

Does the proposal address a specified Focused Action? __X___ yes ____no

What county or counties is the project located in?
Work will be performed in Sacramento County

Indicate the geographic area of your proposal (check only one box):

	Sacramento River Mainstem		East Side Trib:
	Sacramento Trib:		Suisun Marsh and Bay
	San Joaquin River Mainstem		North Bay/South Bay:
	San Joaquin Trib:	X	Landscape (entire Bay-Delta watershed)
	Delta:		Other:

Indicate the primary species which the proposal addresses (check all that apply):

	San Joaquin and East-side Delta tributaries fall-run chinook salmon		Winter-run chinook salmon
	Spring-run chinook salmon		Late-fall run chinook salmon
	Fall-run chinook salmon		Delta smelt
	Longfin smelt		Splittail
	Steelhead trout		Green sturgeon
	Striped bass		Migratory birds
	All chinook species		Other: all species of concern to CALFED
	All anadromous salmonids		

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:
(Strategic Plan Goal 6, Objective 1'). ERP Vol. I, page 506
LONG-TERM OBJECTIVE: Reduce concentrations and loadings of contaminants to levels that do not cause adverse affects on all organisms and ecosystems in the aquatic environment.
SHORT-TERM OBJECTIVE: Reduce concentrations and loadings of contaminants that affect the health of organisms and ecosystems in water and sediments to the extent feasible based on benefits achieved, cost and technological feasibility.

Indicate the type of applicant (check only one box):

X State agency	Federal agency
Public/Non-profit joint venture	Non-profit
Local government/district	Private party
University	Other:

Indicate the type of project (check only one box):

X Planning	Implementation
Monitoring	Education
Research	

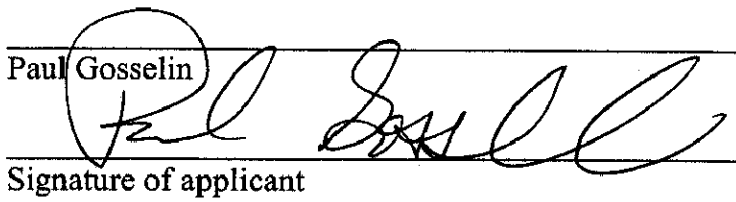
By signing below, the applicant declares the following:

1.) The truthfulness of all representations in their proposal;

2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and

3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Paul Gosselin



Signature of applicant

I. PROJECT TITLE

ADAPTIVE DEVELOPMENT OF A WATERSHED SPECIFIC
PESTICIDE USE MONITORING STRATEGY
FOR THE SACRAMENTO AND SAN JOAQUIN RIVERS
AND THE BAY-DELTA

Applicant:	California Environmental Protection Agency / Department of Pesticide Regulation Environmental Monitoring and Pest Management Branch 830 K Street, Room 200 Sacramento, CA 95814
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The Department of Pesticide Regulation is the sole applicant in this project. The Department of Fish and Game, Pesticide Investigations Unit is a collaborator. Potential consultants/contractors include the Department of Food and Agriculture, Center for Analytical Chemistry.

The Department of Pesticide Regulation is a state government agency.

Tax Identification Number: 68-0325102

II. EXECUTIVE SUMMARY

Project Description: Preliminary investigation on basin-wide monitoring plans reveals that no single previous study adequately addresses all the issues required for a comprehensive pesticide monitoring strategy. Towards achieving such a strategy, this three-phase project consists of a tasks designed to 1) review and summarize existing monitoring data, 2) identify hazards to aquatic organisms from currently registered pesticides, and 3) develop a methodology for prioritizing watersheds for pesticide monitoring.

This project is a logical and essential step towards fulfilling CALFED's goal to reduce and/or eliminate pesticides as water column contaminants, thus reducing overall ecological stressors to resident aquatic species of concern. It also addresses the Department of Pesticide Regulation's (DPR) mission "to evaluate and mitigate impacts of pesticide use . . ." Project tasks include: 1- conduct a complete review and summary of existing pesticide monitoring and toxicity data, 2- perform a comprehensive literature review on pesticide transport, fate, and bioavailability, 3- perform a comprehensive literature review of the toxicity of currently registered pesticides to aquatic organisms and update the California Department of Fish and Game's (CDFG's) recommended water quality criteria, if appropriate, 4- perform toxicity tests on relevant aquatic species with selected pesticides not addressed in literature, 5- determine whether different classes of pesticides found in the Sacramento-San Joaquin river watersheds exhibit additive, synergistic, or antagonistic qualities when they co-occur, and 6- rank currently registered pesticides by watershed for future monitoring.

The project area will contain those hydrologic units in the Ecosystem Restoration Program's (ERP's) study area that make up the lower Sacramento River, and lower San Joaquin River watersheds. The final product will be a formal report which will include a pesticide monitoring strategy and protocol for the Sacramento and San Joaquin River drainage basins and the Delta.

Adaptive management will be used throughout the duration of the project to facilitate task accomplishment.

Ecological/Biological Benefits: Current scientific knowledge of water column stressors, including pesticides, is not adequate to determine the ecological significance or spatial and temporal extent of the impairments. In addressing this deficiency, the ecological and biological objectives of this proposal are to better understand the extent of pesticide contamination in surface water of the study area, to better understand the factors affecting pesticide bioavailability, to determine aquatic toxicity of selected pesticides not addressed in literature, and to further define aquatic toxicity as it relates to co-occurring pesticides. The overall objective is to provide CALFED with an accurate, useful, and practical means of prioritizing pesticides by watershed for monitoring. Integration of project tasks analyses into the development of a pesticide monitoring strategy benefits the Bay-Delta ecosystem in that it identifies the most vulnerable watersheds in the study area and allows for them to be evaluated first.

The project investigates pesticide detections throughout the Bay-Delta system and will provide critically essential data to new and ongoing monitoring efforts such as those conducted by CALFED's Comprehensive Monitoring, Assessment, and Research Program (CMARP), Regional Water Quality Control Boards, Sacramento River Watershed Program (SRWP), Coordinated Monitoring Program (CMP), National Water Quality Assessment Program

(NAWQA), DPR, Department of Water Resources (DWR), and various counties and cities. Specifically, it will provide CMARP and other monitoring programs the prototypical methodology for focused pesticide research, thus allowing for more effective and efficient utilization of monitoring assets.

Technical Feasibility and Timing: The presence of pesticides in surface waterways of the Sacramento and San Joaquin Valleys and the Delta is of continuing concern to those charged with the task of protecting quality of the region's waters. Previous research has identified mechanisms of pesticide transport and problematic toxicity in certain areas of the study area, however, data gaps remain. Six tasks have been identified as essential to filling these data gaps. Tasks 1 and 2 (Phase I), described above, will be completed by DPR staff in years one and two of the project.

Tasks 3 through 5 (Phase II) require laboratory work to be completed under an expansion of an existing contract with the CDFG. Work for both tasks will be coordinated through CDFG's Pesticide Investigations Unit. Specific details have yet to be worked out, but preliminary discussions with the Pesticide Investigations Unit indicate that CDFG will perform the work.

In Task 6 (Phase III) DPR will review hydrologic characteristics of watersheds within the ERP study area, pesticide physicochemical properties, pesticide detections in surface water, and pesticide use in order to rank watersheds and pesticides for monitoring. DPR is in the unique position to effectively and efficiently complete this CALFED focused action because DPR runs and maintains California's pesticide databases and has unrestricted access to them. These include the Pesticide Use Reporting (PUR), Surface Water, and Well Inventory databases. DPR also has extensive GIS expertise which will be used in the analysis. Tasks 3 through 6 would be completed in years two and three. DPR envisions no obstacles to implementing this project.

Monitoring and Data Collection Methodology: Monitoring or feedback on the progress of the project involves peer review only. Testing methodology and data analysis for toxicity tests would conform to current U.S. Environmental Protection Agency protocols. The ranking matrix and resultant monitoring strategy will be compared to other regional ones to determine which strategy more accurately prioritizes pesticides by watershed for future research.

Local Involvement and Public Outreach: DPR will involve local groups by providing workshops on the project status throughout the affected counties. Updates will be given during DPR's annual Dormant-Spray Workshop and at appropriate program meetings. Any official requests for formal presentations will also be granted. CDFG has expressed its support for this project. DPR anticipates no negative third party impacts.

Cost and Cost-Sharing: Total for 3 Years = $ 729,726. Phase I Total = $ 247,910. Phase II Total = $ 386,505. Phase III Total = $ 95,311. Cost-sharing consists of in-kind costs for overall project management and expenses related to public outreach. Incremental funding by phase or by task for this project could be accommodated.

Applicant Qualifications: DPR is the state's lead agency for the evaluation of pesticide use and responsible for the protection of public health and the environment resulting from that use. As such, DPR is preeminently qualified to conduct this project. CDFG is the state's lead agency in wildlife research and is responsible for protecting its wildlife. As such, they are preeminently qualified to conduct aquatic toxicity studies and evaluate ecological hazards.

III. PROJECT DESCRIPTION

A – Proposed Scope of Work

Preliminary investigation on basin-wide monitoring plans reveals that no single previous study adequately addresses all the issues required for a comprehensive pesticide monitoring strategy. This project is an essential and logical step towards fulfilling CALFED's goal to reduce and/or eliminate pesticides as water column contaminants, thus reducing overall ecological stressors to resident aquatic species of concern. It consists of a three-phase program designed to identify actual and potential pesticide contamination of California's surface waters, and it complements the Ecosystem Restoration Program's (ERP's) vision for contaminants as described in Volume I of the ERP Plan, page 503. The first phase is investigative in its scope and involves review of existing monitoring data, cross-referencing of existing monitoring compilations, literature reviews, and preliminary data analysis.

The second phase will identify hazards to aquatic organisms from pesticides by performing toxicity tests with relevant species including, but not limited to, *Ceriodaphnia dubia*, *Neomysis mercedis,* and *Selenastrum capricornutum*. This investigation will be guided by the information derived from Phase One work.

Phase Three will utilize existing computer databases and Geological Information Systems (GIS) coverages in the development of a watershed specific monitoring strategy. This strategy will include a newly developed watershed/pesticide matrix in ranking watersheds for pesticide monitoring within the Delta, the lower Sacramento River, and lower San Joaquin River drainage basins. The ranking system, based on information from statewide databases and GIS coverages, will also be applicable throughout the entire CALFED ERP study area.

Project reports will provide CALFED with the required information needed to prioritize monitoring of future projects. In addition, the project's resultant pesticide monitoring strategy and ranking system will undoubtedly be the quintessential tool for watershed planning and management, including Best Management Practices (BMP) implementation and Total Maximum Daily Load (TMDL) development.

The Department of Pesticide Regulation (DPR) is in a unique position to effectively and efficiently complete this CALFED focused action because DPR runs and maintains California's pesticide databases and has unrestricted access to them. These include the Pesticide Use Reporting (PUR), Surface Water, and Well Inventory databases.

The Department of Pesticide Regulation has selected the following focused action elements to provide, both CALFED and DPR, a quality product which analyzes pesticide use, concentrations, and toxicological endpoints. Several of the remaining focused action elements go well beyond a monitoring strategy and would be difficult at best to successfully complete under constraints of a grant or contract. Therefore, DPR has chosen to focus on action elements which will provide readily tangible, and scientifically valid results. Detailed descriptions of both project phases follow. Each phase may be funded separately if necessary.

Phase One

Task 1: Conduct a complete review of existing pesticide monitoring data. City, county, state, and federal agencies and private groups will be surveyed for monitoring data.

Compilations of monitoring programs have been previously produced by the Central Valley Regional Water Quality Control Board, DWR, and SRWP, but no one has published a comprehensive analysis of the existing data. Data will be screened for completeness and for conformity with quality assurance/quality control specifications. The data will also be maintained in DPR's surface water database. Newly obtained data will be combined with existing data to provide a current document cross-referenced by the DWR hydrologic unit system for easier watershed specific reference.

Task 2: Perform a comprehensive literature review on pesticide transport, fate, and bioavailability. Scientific journals, university and state libraries, and government agencies will be queried to provide a current, sortable bibliography of the task items.

Phase Two

Task 3: Perform a comprehensive literature review of the toxic effects of pesticides to aquatic organisms and update CDFG's recommended water quality criteria, if appropriate. Scientific journals, university and state libraries, and government agencies will be queried to provide a current, sortable bibliography of the task item.

Task 4: Perform toxicity tests on relevant aquatic species with selected pesticides not addressed in literature. After identifying data gaps in Tasks 1 through 3, toxicity tests using current U.S. EPA methods and relevant sensitive species will be performed. DPR will consult with the California Department of Fish and Game (CDFG) on toxicological matters. All results and analyses will be provided in a final document.

Task 5: Determine whether different classes of pesticides found in the Sacramento-San Joaquin river watersheds exhibit additive, synergistic, or antagonistic qualities when they co-occur. Toxicity tests using relevant sensitive species will be used to determine task elements of the most commonly co-occurring pesticides in the watersheds that make up the lower Sacramento and San Joaquin River drainage basins. DPR will consult with the California Department of Fish and Game (CDFG) on toxicological matters. All results and analyses will be provided in a final document.

Phase Three

Task 6: Rank pesticides by watershed for future monitoring. DPR's PUR database is the repository for California's agricultural and structural pesticide use data. DPR's surface water database catalogues all reported pesticide detections and toxicity in California. Pesticide use, detections, toxicity, and physicochemical properties are factors that will be used, in an adaptive process, to develop a watershed/pesticide matrix in ranking pesticides for monitoring. Watershed specific ranking will be developed using in-house Geographic Information Systems (GIS) expertise to link pesticide use with the geographic boundaries of DWR hydrologic units in the Sacramento and San Joaquin Valleys, and the Delta. However, the model could be used throughout the CALFED study area.

Watershed analysis of the Sacramento Valley will soon start under a cooperative effort between DPR and SRWP as part of a diazinon analysis of the watershed. It is anticipated that much of that work will be applicable to this project.

An adaptive management approach that adjusts to developments as data are evaluated will be used throughout the duration of the project. The final product will be a formal report which will include a pesticide monitoring strategy and protocol for the Sacramento and San Joaquin rivers and the Delta. The report will also include a detailed analysis and summary of the findings in each of the project tasks.

This project does not relate to any legal requirement or existing agency mandate.

B – Geographic Boundaries

Tasks 1 and 2 of the project are largely investigative and will be completed at DPR offices, 830 K Street, Sacramento, California. Tasks 3 through 5 involve laboratory work that will be performed at CDFG's ATL, 9300 Elk Grove-Florin Road, Elk Grove, California and final analysis to be performed at CDFG's Pesticide Investigations Unit, 1701 Nimbus Road, Rancho Cordova, California. Phase Three will investigate pesticide use, detections, and toxicity in the hydrologic units mentioned above in Task 6 (Attachment 1). The boundaries as shown in the attached figure are defined in a statewide GIS coverage named HBASA2, produced by CDFG and available from the Teale GIS Technology Center.

IV. ECOLOGICAL/BIOLOGICAL BENEFITS

A – Ecological/Biological Objectives

The primary CALFED ERP strategic goal addressed by this project is water quality. Current scientific knowledge of water column stressors, including pesticides, is not adequate to determine the ecological significance or spatial and temporal extent of the impairments. In addressing this deficiency, the ecological and biological objectives of this proposal are to better understand the extent of pesticide contamination in surface water of the study area - the Sacramento and San Joaquin valleys and the Bay-Delta, to better understand the factors affecting bioavailability of pesticides, to determine aquatic toxicity of detected pesticides not addressed in literature, and to further define aquatic toxicity as it relates to co-occurring pesticides. *The overall objective is to provide CALFED and DPR an accurate, useful, and practical means of prioritizing watersheds for pesticide monitoring.*

These project objectives address the CALFED programmatic goal of reducing surface water contaminants by further defining the geographic and biological extent of pesticide contamination. In addition, it provides a systematic method for prioritizing monitoring efforts in the study area and throughout the CALFED ERP study area.

Integration of project tasks analyses into the development of a pesticide monitoring strategy benefits the ecosystem in that it identifies the most vulnerable watersheds in the study area and allows for them to be evaluated first. Vital to the overall recovery and conservation of native species in the Delta, the pesticide monitoring strategy is an initial step in a process of mitigating potential effects of pesticides on aquatic species. Recreational and commercial species may also benefit from the future reduction in surface water contamination.

B – Linkages to Future Projects and System-Wide Benefits

This project is an essential first step towards addressing the ERP's strategic objective of developing regional plans to reduce the effects of non-point source contaminants (Volume 1, ERP Plan, page 421). The project study area encompasses portions of the Sacramento-San Joaquin Delta, Suisun Marsh/North San Francisco Bay, Sacramento River, Colusa Basin, Butte Basin, Yolo Basin, Eastside Delta Tributaries, San Joaquin River, East San Joaquin Basin, and West San Joaquin Basin Ecological Management Zones as described in Volume II of the ERP Plan, pages 54-455. Consequently, it investigates pesticide detections throughout the Bay-Delta and will provide essential data to new and ongoing monitoring efforts such as those conducted by CALFED's CMARP, Regional Water Quality Control Boards, SRWP, NAWQA, DPR, DWR, and various counties and cities. Specifically, it will provide CMARP, and other monitoring programs, the prototypical methodology for focused pesticide research, thus allowing for more effective and efficient utilization of monitoring assets.

The project's objectives are seamless with CALFED's overall objective of developing a long-term comprehensive plan that will restore ecosystem health for beneficial uses of the Bay-Delta system in that it provides information that further clarifies the extent of pesticide contamination and toxicity in specific watersheds.

This project also complements the California State Water Resources Control Board's Non-Point Source Program by providing its managers a more thorough and complete base of knowledge on the physical and chemical mechanisms that affect the distribution of pesticides in surface water.

C – Compatibility with Non-Ecosystem Objectives

It is envisioned that the resultant monitoring strategy will be used by CALFED and DPR for prioritizing monitoring efforts. The monitoring strategy will reflect new toxicological findings and as such, aligns perfectly with the CALFED Water Quality Program's pesticides objective of "managing pesticides through existing regulatory agencies and voluntary cooperation of pesticide users such that the beneficial uses of the waters of the Bay-Delta and its tributaries are not impaired by toxicity originating from pesticide use." Summary analysis from the project will also provide the CALFED's Water Quality Technical Group vital data for developing pesticide water quality objectives.

The applicant believes that a water quality monitoring program must have stakeholder cooperation to be effective and meaningful. This project is consistent with the goals of CALFED's Watershed Management Program in that an element of the final monitoring strategy will be coordination with local watershed groups. Project objectives also directly complement DPR efforts including the Surface Water Protection Program, Rice Pesticides Program, Dormant-Spray Monitoring Program, Groundwater Protection Program, and the SRWP/DPR Sacramento Valley diazinon analysis project.

Short-term benefits to residents of the study area include better understanding of the extent of pesticide contamination and its contribution to aquatic toxicity, and improved watershed management by rural and urban planners. Long-term benefits include those that would be derived from the subsequent implementation of effective non-point source management measures, including improved water quality for recreation, agricultural, and municipal use.

V. TECHNICAL FEASIBILITY AND TIMING

The presence of pesticides in surface waterways of the Sacramento and San Joaquin Valleys and the Delta is of continuing concern to those charged with the task of protecting quality of the region's waters. Previous research has identified mechanisms of pesticide transport responsible for their off-site movement to surface water. Other studies have identified problematic toxicity in certain areas of the Sacramento and San Joaquin valleys, however, data gaps remain. Six tasks have been identified as essential to filling these data gaps. Phase One work (Tasks 1 and 2) involves review of existing monitoring data, cross-referencing of existing monitoring compilations, literature reviews, and preliminary data analysis, all of which, will be completed by DPR staff in years one and two of the project.

Phase Two (Tasks 3 - 5) requires laboratory work to be completed under an expansion of an existing contract with CDFG. Work for both tasks will be coordinated through CDFG's Pesticide Investigations Unit. One of the work products will include aquatic toxicity tests on relevant species with selected pesticides not addressed in literature with a complete analysis of the data. The other work product will include the determination of additive, synergistic, or antagonistic effects of co-occurring pesticides (identified and prioritized in Phase One) to aquatic organisms. CDFG will perform these tasks which will be completed in years two and three of the project.

Phase Three (Task 6) involves extensive analysis of the following data types: hydrologic, topographic, pesticide physicochemical properties, pesticide detections in surface water, and pesticide use. DPR is in the unique position to effectively and efficiently complete this CALFED focused action because DPR runs and maintains California's pesticide databases and has unrestricted access to them. These include the PUR, Surface Water, and Well Inventory databases. DPR also has extensive GIS expertise which will be used in the analysis. Tasks 4 through 6 would be completed in years two and three.

DPR envisions no obstacles to implementing this project. All applicable laws and regulation will be complied with, and no permits nor easements are required.

VI. MONITORING AND DATA COLLECTION METHODOLOGY

Tasks 1 through 3 and 6 propose no sample collection, direct habitat development, or construction tasks or laboratory work, therefore, monitoring or feedback on the progress of the project involves peer review only. Draft task products will be forwarded to the ERP, CMARP, State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards, USGS, SRWP, and other appropriate groups for comments. These peer reviews serve as feedback to ensure the desired work product and will be requested every six months throughout the duration of the task. This review cycle may be adjusted based on comments and recommendations by the reviewers.

Tasks 4 and 5 provide a unique opportunity to conduct bioassay work with a resident species in addition to standardized *C. dubia* tests. Preliminary consultation with CDFG indicates that a component of the work would be performed with *Neomysis mercedis* (Opossum Shrimp), a key invertebrate in the Bay-Delta ecosystem. Additionally, work with *Selenastrum*

capricornutum would also be performed. The data generated with these tests would provide vital information for evaluating whether or not specific pesticides exclusively act as causal agents in the toxicity of native species.

The ranking matrix and resultant monitoring strategy developed in Task 6 will be compared to those of the Regional Boards, SRWP, CMP, & USGS to determine which better prioritizes pesticides for future research.

Table 1. Monitoring and Data Collection Information

Ecological/Biological Objectives - discussed above in detail in the "Ecological/Biological Benefits" section.			
Hypothesis This project will provide CALFED . . .	**Data Collection Approach & Monitoring Parameter(s)**	**Data Evaluation Approach**	**Comments/Data Priority**
a better understanding of the extent of pesticide contamination in surface water in the study area.	See Tasks 1 & 2. Peer reviews of the draft work product will be requested from ERP, CMARP, & other appropriate groups @ 6 mos. intervals.	Data will be compiled & analyzed using appropriate scientific & statistical methods.	Peer reviews serve as feedback to ensure the desired work product.
a better understanding of pesticides affect aquatic organisms and pesticide bioavailability.	See Task 3. Peer reviews of the draft work product will be requested from ERP, CMARP, and other appropriate groups @ 6 mos. intervals.	Data will be compiled & analyzed using appropriate scientific & statistical methods.	Peer reviews serve as feedback to ensure the desired work product.
a determination of aquatic toxicity of selected pesticides not addressed in literature.	See Task 4. Standard methods. Protocols for lab work and reporting requirements will be subject to CALFED approval.	Total number of bioassays are dependent on data collected in the literature review but are estimated at 20. Endpoints will be evaluated using conventional scientific & statistical methods.	Review of protocols serves as feedback to ensure the desired work product.
a further definition of aquatic toxicity as it relates to co-occurring pesticides.	See Task 5. Standard methods. Protocols for lab work and reporting requirements will be subject to CALFED approval.	Total number of bioassays are dependent on data collected in the literature review but are estimated at 12. Endpoints will be evaluated using conventional scientific and statistical methods.	Review of protocols serves as feedback to ensure the desired work product.

an accurate, useful, and practical means of prioritizing watersheds for pesticide monitoring.	See Task 6. Peer reviews of the draft work product will be requested from ERP, CMARP, & other appropriate groups @ 6 mos. intervals.	The ranking matrix and resultant monitoring strategy will be compared to those of the Regional Brds., SRWP, CMP, & NAWQA to determine which better prioritizes pesticides for future research.	Peer reviews serve as feedback to ensure the desired work product.

VII. LOCAL INVOLVEMENT AND PUBLIC OUTREACH

The Agricultural Commissioners and Board of Supervisors in the following counties have been notified of this proposed project: Fresno, Madera, San Joaquin, Stanislaus, Merced, Contra Costa, Solano, Yolo, Sacramento, Placer, Sutter, Yuba, Colusa, Glenn (attachment 2). As part of this project, DPR will involve local groups by providing workshops throughout the affected counties. Workshops will be coordinated with CALFED's Watershed Management Program to provide local groups and agencies opportunity for input to the development of the proposed monitoring strategy. Commodity groups and local industry will be kept informed of project status through monthly Pesticide Registration Evaluation Committee and Pesticide Advisory Committee meetings.

Additionally, DPR is an active participant in several groups including CALFED's Ecosystem Roundtable and Water Quality Technical Groups, SRWP, the San Francisco Estuary Project, and the Urban Pesticide Committee. DPR's participation and interaction with these groups, as well as with numerous stewardship groups, provides ample opportunity for dissemination of the information produced by this project.

DPR anticipates no negative third party impacts.

VIII. COST

Table 2. Total Budget (CALFED funds only)

	Direct Labor Hours	Direct Salary & Benefits	Service Contracts	Material & Acquisition Costs	Misc. & other Direct Costs	Overhead & Indirect Costs	Total Cost
Task 1	520	$ 16,494			$ 10,318	$ 4,971	$ 31,783
Task 2	3,536	$ 112,161			$ 70,161	$ 33,805	$ 216,127
Phase One Total		$ 128,659			$ 80,479	$ 38,777	$ 247,910
Task 3			$ 117,000				$ 117,000
Task 4			$ 123,345				$ 123,345
Task 5			$ 146,160				$ 146,160
Phase Two Total			$ 386,505				$ 386,505
Task 6	1,559	$ 49,452			$ 30,954	$ 14,905	$ 95,311
Phase Three Total		$ 49,452			$ 30,954	$ 14,905	$ 95,311

Table 3. Phase One Quarterly Budget

Year 1	**Oct-Dec 99**	**Jan-Mar 00**	**Apr-Jun 00**	**Jul-Sep 00**	**Total Budget**
Task 1	$ 2,649	$ 2,649	$ 2,649	$ 2,649	$ 10,596
Task 2	$ 18,011	$ 18,011	$ 18,011	$ 18,011	$ 72,044
Total	$ 20,659	$ 20,659	$ 20,659	$ 20,659	$ 82,636
Year 2	**Oct-Dec 00**	**Jan-Mar 01**	**Apr-Jun 01**	**Jul-Sep 01**	**Total Budget**
Task 1	$ 2,649	$ 2,649	$ 2,649	$ 2,649	$ 10,242
Task 2	$ 18,011	$ 18,011	$ 18,011	$ 18,011	$ 72,044
Total	$ 20,659	$ 20,659	$ 20,659	$ 20,659	$ 82,636
Year 3	**Oct-Dec 01**	**Jan-Mar 02**	**Apr-Jun 02**	**Jul-Sep 02**	**Total Budget**
Task 1	$ 2,649	$ 2,649	$ 2,649	$ 2,649	$ 10,242
Task 2	$ 18,011	$ 18,011	$ 18,011	$ 18,011	$ 72,044
Total	$ 20,659	$ 20,659	$ 20,659	$ 20,659	$ 82,636

Table 4. Phase Two Quarterly Budget

Year 1	**Oct-Dec 99**	**Jan-Mar 00**	**Apr-Jun 00**	**Jul-Sep 00**	**Total Budget**
Task 3	$ 9750	$ 9750	$ 9750	$ 9750	$ 39,000
Task 4	$ 10,279	$ 10,279	$ 10,279	$ 10,279	$ 41,116
Task 5	$ 12,180	$ 12,180	$ 12,180	$ 12,180	$ 48,720
Total	$ 32,209	$ 32,209	$ 32,209	$ 32,209	$ 128,836
Year 2	**Oct-Dec 00**	**Jan-Mar 01**	**Apr-Jun 01**	**Jul-Sep 01**	**Total Budget**
Task 3	$ 9750	$ 9750	$ 9750	$ 9750	$ 39,000
Task 4	$ 10,279	$ 10,279	$ 10,279	$ 10,279	$ 61,672
Task 5	$ 12,180	$ 12,180	$ 12,180	$ 12,180	$ 73,080
Total	$ 32,209	$ 32,209	$ 32,209	$ 32,209	$ 128,836
Year 3	**Oct-Dec 01**	**Jan-Mar 02**	**Apr-Jun 02**	**Jul-Sep 02**	**Total Budget**
Task 3	$ 9750	$ 9750	$ 9750	$ 9750	$ 39,000
Task 4	$ 10,279	$ 10,279	$ 10,279	$ 10,279	$ 61,672
Task 5	$ 12,180	$ 12,180	$ 12,180	$ 12,180	$ 73,080
Total	$ 32,209	$ 32,209	$ 32,209	$ 32,209	$ 128,836

Table 5. Phase Three Quarterly Budget

Year 1	**Oct-Dec 99**	**Jan-Mar 00**	**Apr-Jun 00**	**Jul-Sep 00**	**Total Budget**
Task 6	$ 7,943	$ 7,943	$ 7,943	$ 7,943	$31,772
Year 2	**Oct-Dec 00**	**Jan-Mar 01**	**Apr-Jun 01**	**Jul-Sep 01**	**Total Budget**
Task 6	$ 7,943	$ 7,943	$ 7,943	$ 7,943	$31,772
Year 3	**Oct-Dec 01**	**Jan-Mar 02**	**Apr-Jun 02**	**Jul-Sep 02**	**Total Budget**
Task 6	$ 7,943	$ 7,943	$ 7,943	$ 7,943	$31,772

The Indirect Cost Rate is determined by dividing the overhead costs by the total Personal Services (Salaries and Benefits) for direct program activities. Overhead includes all the costs of the Executive Offices, the Division of Administration, and DPR's Program Supervision Offices as well as the statewide cost centers (i.e. Dept. of Finance, State Controller's, etc.). The rates used are approved annually by U.S.EPA and are in accordance with Federal requirements.

Incremental funding for this project by phase or by task could be accommodated.

IX. COST-SHARING

Cost-sharing for this project consists of in-kind costs for overall project management and expenses related to public outreach.

X. APPLICANT QUALIFICATIONS

DPR is the state's lead agency for the evaluation of pesticide use and responsible for the protection of public health and the environment resulting from that use. DPR's Environmental Monitoring and Pest Management Branch (EMPM) provides the lead role in implementing the Department's environmental protection programs. EMPM designs studies, coordinates review of study protocols, coordinates participation of other branches, agencies, local agricultural commissioners, and local cooperators, prepares sample collection equipment, collects the data, and analyzes the results, and presents the study in a written report. These studies are conducted to provide data to assess health risks of pesticide residues in the environment, to characterize drift and post-application off site movement that may cause illegal crop residues or crop damage, and to evaluate the effect of application methods on movement of pesticides in air. As such, DPR is preeminently qualified to conduct this project. Key DPR staff include:

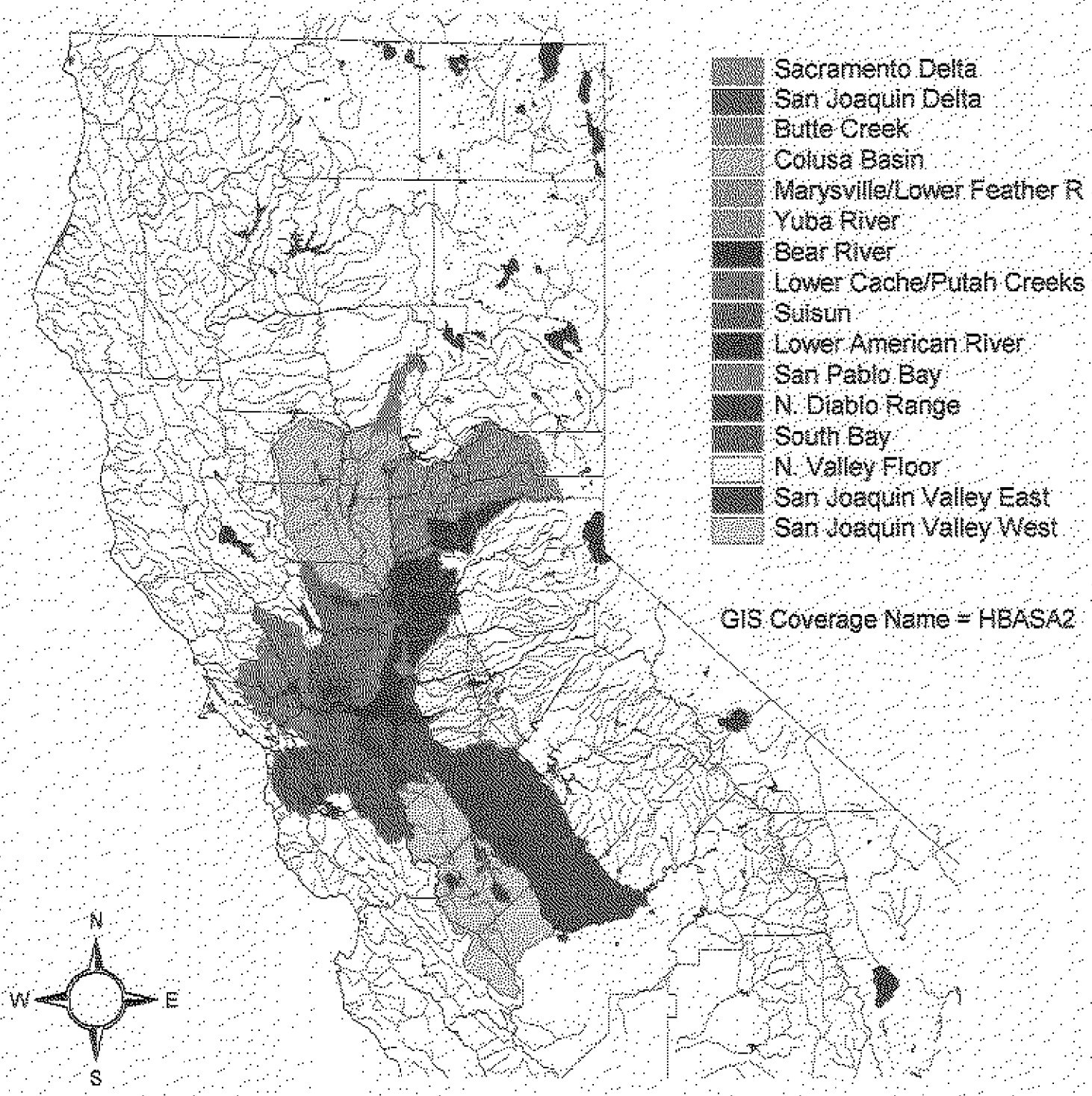
Dr. Kean Goh, Agricultural Program Supervisor IV
Mr. Bob Rollins, Agricultural Program Supervisor III
Mr. Marshall Lee, Senior Environmental Research Scientist
Dr. Lisa Ross, Senior Environmental Research Scientist

Mr. Marshall Lee is the lead investigator and will have three task managers under his overall supervision. One manager will supervise Tasks 1 and 2, another will supervise Tasks 3 through 5, working closely with CDFG, and another will supervise Task 6. Each task manager will utilize the professional expertise in DPR's EMPM and consult with other departmental staff as required.

CDFG's Pesticide Investigations Unit operates the Aquatic Toxicology Laboratory (ATL) which performs evaluations of the hazards of pesticides to aquatic organisms. ATL is a state-accredited laboratory and has performed over 100 aquatic bioassays per year in its ten years of operation. Mr. Brian Finlayson is chief of CDFG's Pesticide investigations Unit and will be the contact person for contracts addressing Tasks 3 through 5.

Attachment 1

Hydrologic Units in the Study Area of DPR's CALFED Proposal



I-019418

KEITH C

Department of Pesticide Regulation

Winston H. Hickox
Secretary for Environmental Protection

830 K Street • Sacramento, California 95814-3510 • www.cdpr.ca.gov

Gray Davis
Governor

April 16, 1999

Board of Supervisors President Keith Carson
County Administrative Building
1221 Oak Street, Suite 536
Oakland, California 94612

Dear Honorable Keith Carson:

As required by the CALFED Bay Delta Program, the California Department of Pesticide Regulation (DPR) is hereby notifying you that we are submitting four proposals in response to the recent CALFED Proposal Solicitation package. The projects that DPR are proposing may either be performed in your county, or may involve collection of data related to activities in your county.

The proposed projects are:

DPR Pesticide Use Data on an Internet Site
A project to make the DPR Pesticide Use Report Database available to users through the Internet. Work will be performed in Sacramento and Yolo counties; however, data encompasses all counties in the CALFED area.

Reduction of Insecticides Loads in the San Joaquin Watershed
A project to evaluate best management practices to reduce surface water contamination from insecticides used in almonds. Work may be performed in Stanislaus, San Joaquin, and/or Merced counties. Work may also be performed in one or more counties in the Sacramento Valley. Final identification of counties will depend on identification of cooperating growers.

Adaptive Development of a Watershed Specific Pesticide Use Monitoring Strategy
Project will assess pesticide use, chemistry, and toxicological data for use in the developing a comprehensive monitoring strategy for CALFED. Work will be performed in Sacramento county, however, data may be collected and assessed concerning any county within the CALFED area.

Implementation of Management Practices that Prevent Offsite Movement of Chlorpyrifos from Alfalfa
A project to evaluate best management practices to reduce surface water contamination from insecticides used in almonds. Work will be performed in Stanislaus, San Joaquin, and/or Merced counties. Final identification of counties will depend on names of cooperating growers.

Unless we hear otherwise, DPR will consider the Alameda County agricultural commissioner, Mr. Earl G. Whitaker as our contact person for projects in your county. If you have any questions please feel free to contact me, or your staff may contact Ms. Kathy Brunetti, of my staff, at (916) 324-4100. You can also reach Kathy by fax, at (916) 324-4088 or by e-mail, at <kbrunetti@cdpr.ca.gov>.

Sincerely,

Douglas Y. Okumura, Acting Assistant Director
Division of Enforcement, Environmental
Monitoring, and Data Management
(916) 324-4100

cc: Ms. Kathy Brunetti
Mr. Daniel J. Merkley
CALFED Bay Delta Program
CAC

I-019420

A similar letter was sent to:

Board of Supervisors President Keith Carson
County Administrative Building
1221 Oak Street, Suite 536
Oakland, California 94612

Board of Supervisors Chair Chris Gansberg
PO Box 158
Markleeville, California 96120

Board of Supervisors Chair Edward T. Bamert
500 Argonaut Lane
Jackson, California 95642

Board of Supervisors Chair Fred C. Davis
25 County Center Drive
Oroville, California 95965

Board of Supervisors Chair Terri Bailey
Government Center
891 Mountain Ranch Road
San Andreas, California 95249

Board of Supervisors Chair Nathaniel L. McCoy
County Courthouse
546 Jay Street
Colusa, California 95932

Board of Supervisors Chair Mark DeSaulnier
County Administration Building
651 Pine Street, Room 106
Martinez, California 94553

Board of Supervisors Chair John E. Upton
330 Fair Lane
Placerville, California 95667

I-019421

Board of Supervisors Chair Stan Oken
2281 Tulare Street, Hall of Records, Room 300
Fresno, California 93721

Board of Supervisors Chair Dick Mudd
526 West Sycamore Street
Willows, California 95988

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County Government Courthouse
1400 West Lacy Boulevard
Hanford, California 93230

Board of Supervisors Chair Carl M. Larson
255 North Forbes Street
Lakeport, California 95453

Board of Supervisors Chair Lyle Lough
221 South Roop Street
Susanville, California 96130

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209 West Yosemite Avenue
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San Rafael, California 94903

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2222 M Street
Merced, California 95340

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1195 3rd Street, Room 310
Napa, California 94559

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San Francisco, California 94102

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Stockton, California 95202

Board of Supervisors President Mike Nevin
401 Marshall Street
Redwood City, California 94063

I-019423

Board of Supervisors Chair Dianna McKenna
County Government Courthouse
70 West Hedding Street
San Jose, California 95110

Board of Supervisors Chair Richard Dickerson
1815 Yuba Street
Redding, California 96001

Board of Supervisors Chair Richard Luchessi
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Downieville, California 95936

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Yreka, California 96097

Board of Supervisors Chair Gordon Gojkovich
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580 Texas Street
Fairfield, California 94533

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1100 H Street
Modesto, California 95354

Board of Supervisors Chair Cornelis Casey Kroon
1160 Civic Center Boulevard
Yuba City, California 95993

Board of Supervisors Chair Charles Willard
PO Box 250
Red Bluff, California 96080

Board of Supervisors Chair Matt Leffler
County Courthouse
PO Box 1258
Weaverville, California 96093

Board of Supervisors Chair Bill Maze
Administration Building
2800 West Burrel
Visalia, California 93291

Board of Supervisors Chair Larry Rotelli
2 South Green Street
Sonora, California 95370

Board of Supervisors Chair Dave Rosenberg
625 Court Street, Room 204
Woodland, California 95695

Board of Supervisors Chair Al Amaro
215 5th Street
Marysville, California 95901

Winston H. Hickox
Secretary for Environmental Protection

Department of Pesticide Regulation

830 K Street • Sacramento, California 95814-3510 • www.cdpr.ca.gov

Gray Davis
Governor

April 16, 1999

Bay Conservaion and Development Commission
30 Van Ness Avenue, Room 2011
San Francisco, California 94102

Dear Commission Members:

As required by the CALFED Bay Delta Program, the California Department of Pesticide Regulation (DPR) is hereby notifying you that we are submitting four proposals in response to the recent CALFED Proposal Solicitation package. The projects that DPR are proposing may either be performed in your region, or may involve collection of data related to activities in your county.

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If you have any questions, please contact Ms. Kathy Brunetti, of my staff, at (916) 324-4087. You can also reach her by e-mail, at <kbrunetti@cdpr.ca.gov>.

Sincerely,

Douglas Y. Okumura, Acting Assistant Director
Division of Enforcement, Environmental

I-019427

Winston H. Hickox
Secretary for Environmental Protection

Department of Pesticide Regulation

830 K Street • Sacramento, California 95814-3510 • www.cdpr.ca.gov

Gray Davis
Governor

April 16, 1999

Delta Protection Commission
P.O. Box 530
Walnut Grove, California 95690

Dear Commission Members:

As required by the CALFED Bay Delta Program, the California Department of Pesticide Regulation (DPR) is hereby notifying you that we are submitting four proposals in response to the recent CALFED Proposal Solicitation package. The projects that DPR are proposing may either be performed in your region, or may involve collection of data related to activities in your region.

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If you have any questions, please contact Ms. Kathy Brunetti, of my staff, at (916) 324-4087. You can also reach her by e-mail, at <kbrunetti@cdpr.ca.gov>.

Sincerely,

Douglas Y. Okumura, Acting Assistant Director
Division of Enforcement, Environmental
Monitoring, and Data Management
(916) 324-4100

cc: Ms. Kathy Brunetti
CALFED Bay Delta Program

I-019429

Per Table D-1. The Department of Pesticide Regulation, a State Agency, is not submitting state contract forms with this proposal